

REMARKS

Claims 1-5 are pending in the above-identified application. Claim 1 is amended. It is respectfully submitted that this Amendment is fully responsive to the Office Action dated September 7, 2005.

Claims 1, 2 and 4 were rejected under 35 U.S.C. §102(e) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over *Cheng et al.* (U.S. Publication No. 2004/0266122). Applicants respectfully disagree with the Examiner's reasons for rejecting claims 1, 2 and 4. However, to expedite prosecution, Applicants amend claim 1. In view of this amendment and the following remarks, Applicants request that the Examiner allow claims 1, 2 and 4.

A claim is anticipated only if *each and every element* as set forth in the claim is found, either expressly or inherently described in a single prior art reference. Here, a first impurity-diffused region formed, as being aligned with said gate, is not disclosed in the *Cheng* reference. Therefore, even assuming that the LDD 8 region is a first impurity-diffused region; the LDD region is not aligned with the gate electrode 4. (See Figs. 1-6).

Also, contrary to the Examiner's statement that all elements are disclosed in the *Cheng* reference, *a third impurity-diffused region that has a higher impurity-concentration than the first impurity-diffused region*, is not, so the rejection is unsupported by the art and should be withdrawn. In rejecting claim 1, the Examiner mischaracterized the graded source/drain region 24 as the third impurity-diffused region of the present invention. As shown in *Cheng* (Fig. 5), a

source/drain region 18 is formed deeper so as to overlap an LDD region 8 partially than LDD region 8. Further, a graded source/drain region 24 is formed deeper so as to overlap the LDD region 8 and the source/drain region 18 partially than the source/drain region 18. And the source/drain region 18 is formed between the LDD region 8 and the graded source/drain region 24.

In *Cheng*, the dopant concentration of the LDD region 8 is $1 \times 10^{18} \sim 1 \times 10^{22}/\text{cm}^3$ (stated in [0021]), the dopant concentration of the source/drain region 18 is $1 \times 10^{20} \sim 1 \times 10^{22}/\text{cm}^3$ (stated in [0025]), and the dopant concentration of the graded source/drain region 24 is $1 \times 10^{15} \sim 1 \times 10^{18}/\text{cm}^3$ (stated in [0031]).

The Examiner stated that the LDD 8 region is a first impurity-diffused region of the present invention, that the source/drain region 18 is a second impurity-diffused region of the present invention, and that the graded source/drain region 24 is a third impurity-diffused region of the present invention.

However, according to the Examiner's statement, the dopant concentration of the third impurity-diffused region is lower than that of the first impurity-diffused region. Whereas, in the present invention, as shown for example in Fig. 1, the first impurity-diffused region is extension (LDD) region and the third impurity-diffused region is the source/drain region. The dopant concentration of the third impurity-diffused region is higher than that of the first impurity-diffused region.

Moreover, the present invention provides that the second impurity-diffused region is formed by implanting a substance, which has a diffusion suppressive function, between the first impurity-diffused region and the third impurity-diffused region to prevent a lateral diffusion of a dopant from a high dopant concentration of the third impurity-diffused region to a low dopant concentration of the first impurity-diffused region.

In view of the above remarks, it is apparent that the graded source/drain region 24 is not the third impurity-diffused region of the present invention. Therefore, the present invention is different from *Cheng* and is not obvious over *Cheng*.

Also, the Examiner acknowledged that *Cheng* does not disclose a “diffusion suppressive element for suppressing diffusion of an impurity contained in said third impurity-diffused region”. However, the Examiner asserted that it would have been obvious to combine the second impurity-diffused region 18 containing a diffusion suppressive element (arsenic) teaching of *Cheng* with “diffusion suppressive element for suppressing diffusion of an impurity contained in said third impurity-diffused region”, since it has been held that the recitation of a new intended use for an old product does not make a claim to that old product patentable. Applicants respectfully disagree with the Examiner’s position, in part, because the Examiner improperly characterized a dopant similar to the dopant (arsenic) used to form the first impurity-diffused region 8 as a diffusion suppressive element.

The Examiner has failed to produce a *prima facie* case of obviousness, in part because *Cheng* fails to teach or suggest having a “diffusion suppressive element for suppressing diffusion

of an impurity contained in said third impurity-diffused region.” The mere fact that *Cheng* may be modified in the manner suggested by the Examiner does not make the modification obvious unless *Cheng* also suggested the desirability of the modification. Here, the Examiner incorrectly states that it would have been obvious to combine the second impurity-diffused region of *Cheng* with a diffusion suppressive element for suppressing diffusion of an impurity contained in said third impurity-diffused region, since it has been held that the recitation of a new intended use for an old product does not make a claim to that old product patentable. What new intended use is the Examiner referring to? The diffusion suppressive element is for suppressing diffusion of an impurity contained in said third impurity-diffused region. This element is provided in the second impurity-diffused region so that, for example, the extension region 3 and source-and-drain 5 are kept distant from each other, and the lateral diffusion of the impurity from the source-and-drain 5 can be completely blocked. This makes it possible to reduce the junction leakage, contact resistance and sheet resistance even if the source-and-drain is formed so as to have a relatively large depth and impurity concentration to thereby prevent the roll-off characteristic from degrading, and to realize further micronization and higher performances of the MOS transistor.

In view of the above remarks, Applicants respectfully request that the Examiner withdraw the rejections of claims 1, 2, and 4.

Claim 3 was rejected under 35 U.S.C. §103(a) as unpatentable over *Cheng* in view of *Kim et al.*, (US Patent No. 6,275,906) and claim 5 was rejected under 35 U.S.C. §103(a) as unpatentable over *Cheng* in view of *Hayashida et al.* (US Pat No. 5,6903,029). However, claims

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3 and 5 depend from independent claim 1 and are likewise allowable by nature of dependency.

Accordingly, Applicants respectfully request that the Examiner allow claims 3 and 5.

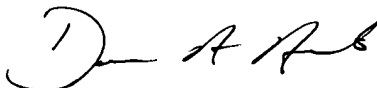
In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate Extension of Time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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